

RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: 10/S21,103
Source: PCT
Date Processed by STIC: 1-25-05

ENTERED



PCT

RAW SEQUENCE LISTING

DATE: 01/25/2005

PATENT APPLICATION: US/10/521,103

TIME: 09:03:49

Input Set : A:\Seqlist.txt

Output Set: N:\CRF4\01252005\J521103.raw

```

4 <110> APPLICANT: Griffiths, Steven Gareth
5     Ritchie, Rachel Jane
6     Simard, Nathalie C.
8 <120> TITLE OF INVENTION: Hsp70 from Arthrobacter
11 <130> FILE REFERENCE: H-32534-A
C--> 13 <140> CURRENT APPLICATION NUMBER: US/10/521,103
C--> 13 <141> CURRENT FILING DATE: 2005-01-11
13 <150> PRIOR APPLICATION NUMBER: PCT/EP03/07602
14 <151> PRIOR FILING DATE: 2003-07-14
16 <150> PRIOR APPLICATION NUMBER: GB 0216414.3
17 <151> PRIOR FILING DATE: 2002-07-15
19 <160> NUMBER OF SEQ ID NOS: 7
21 <170> SOFTWARE: FastSEQ for Windows Version 4.0
24 <210> SEQ ID NO: 1
25 <211> LENGTH: 2464
26 <212> TYPE: DNA
27 <213> ORGANISM: Arthrobacter
29 <400> SEQUENCE: 1
31 ctgcgaatgt ccacgtggtg cgtgcagtga tgcgcttgaa gggcatcgca ccgcgctgaa 60
33 ccgggttcga cccgggtccca ctgagttcgc caactgagtg ggacaagccc gttctgtccc 120
35 agtcacgcgg tcgactcagt gggaccacgc cgcagcgcgga tcgatggtcg ccgcacagct 180
37 ttttccaaag ttgagcacag gtggtcgaac ttagacttga cattggtcgg ctcaagcgta 240
39 aagttgatat cagaacactc aacttgtaag aaatcccgaa aggaaaaaac atgtcacgtg 300
41 cagtaggcat cgacctcgga accaccaact cgggtggtttc cgtcctcgaa ggcggcgagc 360
43 ccgtcgtcat cgcgaacgcc gaaggcggcc gcaccacccc ctcagtcgtc gcgttctcca 420
45 agagcgggtga agtcctggtc ggcgaaatcg ccaagcgcca ggccgtcaac aacatcgatc 480
47 gcaccatcgc ctcggtcaag cgcacatcgg gcaccgactg gaccgtcggc atcgacgaca 540
49 agaagtacac cgcgcaggaa atctccgccc gcacctgat gaagctcaag aacgacgccg 600
51 agtcctactt gggcgaaaag gtcaccgacg cgggtgatcac ggttcctgcc tacttcaacg 660
53 acgccgagcg ccaggccacc aaagaagccg gtgagatcgc cggcctgaac gtgctgcgca 720
55 tcgtcaacga gccactgcg gcggcgctgg cctatggctt ggacaaaggc aaagaagacg 780
57 aactcactct ggtcttcgac ctcggtggcg gcaccttcga cgtctcgctg ctggaagtcg 840
59 gcaaagacga cgacggcttc tccacgatcc aggtccgcgc cacctccggc gacaaccgcc 900
61 tgggcggcga cgactgggat cagcgggatcg tcgactactt gctgaaccag ctcaaggtca 960
63 agggcatcga cctctccaag gacaagatcg cgctgcagcg tctgcgcgaa gcttccgagc 1020
65 agggcaagaa ggaactctcc tcggccacca gcaccaacat ctcgctgcag tacctctcgg 1080
67 tcacccttga cggtcgggtg cacttgagcg agcagctgac ccgggcgaag ttccaggaac 1140
69 tgaccgctga tctgctcgag cgcaccaaga agccgttcca ggacgtgatc gccgaggccg 1200
71 ggatcaagggt ttccgacatc gaccacatcg tgctggtcgg cggttccacc cggatgcccg 1260
73 cagtgaaccga attggtcaag cagctggccg gtggcaagga gccgaacaag ggcgtcaacc 1320
75 cggacgaggt ggtcgccgtc ggcgcgcgc tgcaagccgg cgtgctcaag ggcgaacgca 1380
77 aagacgtgct gctcatcgac gtcacccgcg tttcctcgg catcgaaacc aagggcgggc 1440
79 tgatgaccaa gctgatcgag cggaaacacc cgattccgac caagcgggtc gagaccttca 1500

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```

81 ccacggcgga cgacaaccag ccttcggtgg ccatccaggt gttccaaggc gagcgcgagt 1560
83 tcaccgggga caacaagccg ttgggcacct tcgaactgac cggcatcgca ccggctccgc 1620
85 gcggcggtgcc gcaggtcgaa gtcaccttcg acatcgacgc caacggcatc gtgcacgtgt 1680
87 cggccaaaga caagggcacc ggcaaggagc agtcgatgac catcacgggc ggttcctcgc 1740
89 tgtccaagga agacatcgag cgcattggtc cgcagcgcga ggcacacgct gcagaggaca 1800
91 agggccggcg cgagcaggcc gaggcccgca acagcgcgca gcagctggcg tactcggtgg 1860
93 acaagatcct caccgacaat gacgacaagc tgccggaaga ggtcaagacg gaggtcaagg 1920
95 ccgacgtcgg ggcgctcaag accgcgctgg ccggcaccga tgaggacgcg gtcgaggcgg 1980
97 cctcgagaaa gctgcaggct tcgcagacca aactcggcgg agcgatttac gttcggcccc 2040
99 agggcgaggg tgccgcccgt gccggtgacg ccccgagcga aggtgccaag cccgacgaag 2100
101 acatcgtcga cgccgagatc gtggacgaag aagaaccgaa gaacgagaag aagtagtcat 2160
103 gtccgaccag agccaatctg atcagggccg caaccccgaa aaagacgaaa ccgacgtgga 2220
105 cccggcaacg ggtcccgcgc gggacgttcc ggaggagcag gatcctttgg cgcaagtcca 2280
107 agacatcctg aacaatgccg aggtgcccgc cgacgagtcg gtggcccagg gcgcccggca 2340
109 ggtggatgcc gcagaactca agaacgatct gctgcgcttg caggccgaat acgtgaacta 2400
111 ccgcaaaccg gtcgagcggg acaccagccc gggcgcgcga ccacgcgtgc cctatagtaa 2460
113 gggc 2464
117 <210> SEQ ID NO: 2
118 <211> LENGTH: 621
119 <212> TYPE: PRT
120 <213> ORGANISM: Arthrobacter
122 <400> SEQUENCE: 2
124 Met Ser Arg Ala Val Gly Ile Asp Leu Gly Thr Thr Asn Ser Val Val
125 1 5 10 15
127 Ser Val Leu Glu Gly Gly Glu Pro Val Val Ile Ala Asn Ala Glu Gly
128 20 25 30
130 Gly Arg Thr Thr Pro Ser Val Val Ala Phe Ser Lys Ser Gly Glu Val
131 35 40 45
133 Leu Val Gly Glu Ile Ala Lys Arg Gln Ala Val Asn Asn Ile Asp Arg
134 50 55 60
136 Thr Ile Ala Ser Val Lys Arg His Met Gly Thr Asp Trp Thr Val Gly
137 65 70 75 80
139 Ile Asp Asp Lys Lys Tyr Thr Ala Gln Glu Ile Ser Ala Arg Thr Leu
140 85 90 95
142 Met Lys Leu Lys Asn Asp Ala Glu Ser Tyr Leu Gly Glu Lys Val Thr
143 100 105 110
145 Asp Ala Val Ile Thr Val Pro Ala Tyr Phe Asn Asp Ala Glu Arg Gln
146 115 120 125
148 Ala Thr Lys Glu Ala Gly Glu Ile Ala Gly Leu Asn Val Leu Arg Ile
149 130 135 140
151 Val Asn Glu Pro Thr Ala Ala Ala Leu Ala Tyr Gly Leu Asp Lys Gly
152 145 150 155 160
154 Lys Glu Asp Glu Leu Ile Leu Val Phe Asp Leu Gly Gly Gly Thr Phe
155 165 170 175
157 Asp Val Ser Leu Leu Glu Val Gly Lys Asp Asp Asp Gly Phe Ser Thr
158 180 185 190
160 Ile Gln Val Arg Ala Thr Ser Gly Asp Asn Arg Leu Gly Gly Asp Asp
161 195 200 205
163 Trp Asp Gln Arg Ile Val Asp Tyr Leu Leu Asn Gln Leu Lys Val Lys

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```

164      210      215      220
166 Gly Ile Asp Leu Ser Lys Asp Lys Ile Ala Leu Gln Arg Leu Arg Glu
167 225      230      235      240
169 Ala Ser Glu Gln Ala Lys Lys Glu Leu Ser Ser Ala Thr Ser Thr Asn
170      245      250      255
172 Ile Ser Leu Gln Tyr Leu Ser Val Thr Pro Asp Gly Pro Val His Leu
173      260      265      270
175 Asp Glu Gln Leu Thr Arg Ala Lys Phe Gln Glu Leu Thr Ala Asp Leu
176      275      280      285
178 Leu Glu Arg Thr Lys Lys Pro Phe Gln Asp Val Ile Ala Glu Ala Gly
179      290      295      300
181 Ile Lys Val Ser Asp Ile Asp His Ile Val Leu Val Gly Gly Ser Thr
182 305      310      315      320
184 Arg Met Pro Ala Val Thr Glu Leu Val Lys Gln Leu Ala Gly Gly Lys
185      325      330      335
187 Glu Pro Asn Lys Gly Val Asn Pro Asp Glu Val Val Ala Val Gly Ala
188      340      345      350
190 Ala Leu Gln Ala Gly Val Leu Lys Gly Glu Arg Lys Asp Val Leu Leu
191      355      360      365
193 Ile Asp Val Thr Pro Leu Ser Leu Gly Ile Glu Thr Lys Gly Gly Val
194      370      375      380
196 Met Thr Lys Leu Ile Glu Arg Asn Thr Ala Ile Pro Thr Lys Arg Ser
197 385      390      395      400
199 Glu Thr Phe Thr Thr Ala Asp Asp Asn Gln Pro Ser Val Ala Ile Gln
200      405      410      415
202 Val Phe Gln Gly Glu Arg Glu Phe Thr Arg Asp Asn Lys Pro Leu Gly
203      420      425      430
205 Thr Phe Glu Leu Thr Gly Ile Ala Pro Ala Pro Arg Gly Val Pro Gln
206      435      440      445
208 Val Glu Val Thr Phe Asp Ile Asp Ala Asn Gly Ile Val His Val Ser
209      450      455      460
211 Ala Lys Asp Lys Gly Thr Gly Lys Glu Gln Ser Met Thr Ile Thr Gly
212 465      470      475      480
214 Gly Ser Ser Leu Ser Lys Glu Asp Ile Glu Arg Met Val Ala Asp Ala
215      485      490      495
217 Glu Ala His Ala Ala Glu Asp Lys Ala Arg Arg Glu Gln Ala Glu Ala
218      500      505      510
220 Arg Asn Ser Ala Glu Gln Leu Ala Tyr Ser Val Asp Lys Ile Leu Thr
221      515      520      525
223 Asp Asn Asp Asp Lys Leu Pro Glu Glu Val Lys Thr Glu Val Lys Ala
224      530      535      540
226 Asp Val Gly Ala Leu Lys Thr Ala Leu Ala Gly Thr Asp Glu Asp Ala
227 545      550      555      560
229 Val Glu Ala Ala Ser Glu Lys Leu Gln Ala Ser Gln Thr Lys Leu Gly
230      565      570      575
232 Gly Ala Ile Tyr Ala Ser Ala Gln Ala Glu Gly Ala Ala Ala Gly
233      580      585      590
235 Asp Ala Pro Ser Glu Gly Ala Lys Pro Asp Glu Asp Ile Val Asp Ala
236      595      600      605

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DATE: 01/25/2005

TIME: 09:03:49

Input Set : A:\Seqlist.txt

Output Set: N:\CRF4\01252005\J521103.raw

```

238 Glu Ile Val Asp Glu Glu Glu Pro Lys Asn Glu Lys Lys
239      610                      615                      620
243 <210> SEQ ID NO: 3
244 <211> LENGTH: 20
245 <212> TYPE: PRT
246 <213> ORGANISM: Arthrobacter
248 <400> SEQUENCE: 3
250 Met Ser Arg Ala Val Gly Ile Asp Leu Gly Thr Thr Asn Ser Val Val
251  1      5                      10                      15
253 Ser Val Leu Glu
254      20
258 <210> SEQ ID NO: 4
259 <211> LENGTH: 20
260 <212> TYPE: DNA
261 <213> ORGANISM: Artificial Sequence
263 <220> FEATURE:
264 <223> OTHER INFORMATION: degenerate primers for cloning Arthrobacter hsp70
W--> 266 <221> NAME/KEY: misc_feature
267 <222> LOCATION: 6, 18
268 <223> OTHER INFORMATION: n = A,T,C or G
W--> 270 <221> misc_feature
271 <222> LOCATION: 15
272 <223> OTHER INFORMATION: v= A, G, or C
W--> 274 <400> 4
W--> 276 gtcggmatcg acctvggnac                      20
280 <210> SEQ ID NO: 5
281 <211> LENGTH: 17
282 <212> TYPE: DNA
283 <213> ORGANISM: Artificial Sequence
285 <220> FEATURE:
286 <223> OTHER INFORMATION: degenerate primers for cloning Arthrobacter hsp70
W--> 288 <221> NAME/KEY: misc_feature
289 <222> LOCATION: 6
290 <223> OTHER INFORMATION: s = C or G
W--> 292 <400> 5
294 gcggtsggct cgttgac                      17
298 <210> SEQ ID NO: 6
299 <211> LENGTH: 20
300 <212> TYPE: DNA
301 <213> ORGANISM: Artificial Sequence
303 <220> FEATURE:
304 <223> OTHER INFORMATION: degenerate primers for cloning Arthrobacter hsp70
W--> 306 <221> NAME/KEY: misc_feature
307 <222> LOCATION: 6, 9, 18
308 <223> OTHER INFORMATION: n = A,T,C or G
W--> 310 <221> misc_feature
311 <222> LOCATION: 3, 12
312 <223> OTHER INFORMATION: r = A or G
W--> 314 <221> misc_feature

```

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      315 <222> LOCATION: 15
      316 <223> OTHER INFORMATION: y = C or T
W--> 318 <400> 6
W--> 320 cargcncana argaygcngg 20
      324 <210> SEQ ID NO: 7
      325 <211> LENGTH: 20
      326 <212> TYPE: DNA
      327 <213> ORGANISM: Artificial Sequence
      329 <220> FEATURE:
      330 <223> OTHER INFORMATION: degenerate primers for cloning Arthrobacter hsp70
W--> 332 <221> NAME/KEY: misc_feature
      333 <222> LOCATION: 3, 6, 15
      334 <223> OTHER INFORMATION: n = A,T,C or G
W--> 336 <221> misc_feature
      337 <222> LOCATION: 9
      338 <223> OTHER INFORMATION: y = C or T
W--> 340 <221> misc_feature
      341 <222> LOCATION: 12, 18
      342 <223> OTHER INFORMATION: r = A or G
W--> 344 <400> 7
W--> 346 gcncangcyt crtenggrtt 20

```

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/10/521,103

DATE: 01/25/2005
TIME: 09:03:50

Input Set : A:\Seqlist.txt
Output Set: N:\CRF4\01252005\J521103.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:4; N Pos. 6,18 ✓
Seq#:6; N Pos. 6,9,18 ✓
Seq#:7; N Pos. 3,6,15 ✓

VERIFICATION SUMMARY

PATENT APPLICATION: US/10/521,103

DATE: 01/25/2005

TIME: 09:03:50

Input Set : A:\Seqlist.txt

Output Set: N:\CRF4\01252005\J521103.raw

L:13 M:270 C: Current Application Number differs, Replaced Current Application No
L:13 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:266 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order!
L:270 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:4
L:274 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:4
L:276 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:0
L:288 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order!
L:292 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:5
L:306 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order!
L:310 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:6
L:314 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:6
L:318 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:6
L:320 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:0
L:332 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order!
L:336 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:7
L:340 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:7
L:344 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:7
L:346 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:0